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A CLINICO-PATHOLOGICAL STUDY OF FACIAL HYPERMELANOSIS AT A TERTIARY CARE CENTER, ANANTHAPURAMU

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ABSTRACT

Facial melanosis is an informal term for a collection of heterogeneous entities that share the clinical trait of altered facial pigmentation. It has a significant impact on the person's psychological health because the cosmetic disfigurement it causes is obvious.

To determine and analyze the clinical, demographic characteristics and pathological findings of various facial hyperpigmentary lesions.

Over the course of nine months, a descriptive study was carried out at a tertiary care centre, Government General Hospital, Ananthapuramu. 100 patients with face hyper pigmentation problems were evaluated using a thorough medical history, physical and histopathological examination.

In our analysis, patients between the ages of 30 and 50 were the most frequently seen age group. The majority of those impacted were women. Patients who presented with facial melanosis showed six different types of diagnoses, including melasma, post inflammatory

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hyperpigmentation, Riehl's melanosis, exogenous ochronosis, and topical steroid damaged face. The most prevalent condition, Riehl's melanosis was noted in 30 out of 100 cases.

Due to resource limitations, dermoscopy could not be performed.

An increase in reported incidence of facial melanosis in both sexes is attributed to greater awareness of and concern about appearance. Correct diagnosis and therapy are made more difficult by prior use of over-the-counter drugs. Psychological evaluation along with dermatological management is a crucial aspect in the treatment of these individuals.

Keywords: Hyperpigmentation, Riehl’s melanosis, Melasma, Facial Melanosis

INTRODUCTION:

The normal skin colour is determined primarily by its pigment content found in the epidermis and dermis. Melanin, which is produced by the epidermal melanocytes, is the most important of these pigments. Haemoglobin in oxygenated and reduced form and also carotene are other important ones [1, 2]. Occasionally, certain medications, deposits of drug-melanin complexes, and metals (such as iron, silver, and gold) can affect skin pigmentation. As an optical illusion, regions of skin indentation can now and then seem "hyperpigmented," and the Tyndall effect could make the skin over the venous systems appear bluish in colour [3].

Skin conditions, particularly those on the face, are frequently readily apparent to others unlike the majority of internal disorders, so they can have serious psychological repercussions. Melasma, Riehl’s melanosis, Ashy dermatosis, lichen planus pigmentosus, nevus of Ota, post-inflammatory pigmentation, and other reasons, such as erythromelanosis peribuccale pigmentaire of Brocq, are frequent causes of facial melanoses [4].

The present study was done to determine and analyse the clinical, demographic characteristics and histopathological findings of various facial hyperpigmentary lesions.

MATERIALS AND METHODS:

From December 2021 to August 2022, a nine month study was undertaken in the department of the Dermatology, Government General Hospital in Ananthapuramu after Institutional Ethics committee approval.

On their first visit, all patients receiving treatment at the outpatient department for facial hyperpigmentation problems were recruited in the study. Written consent was obtained. A thorough clinical history including the age of onset, sex, duration, potential risk factors and any prior treatments taken were recorded. To record the location of the lesions, the pigment hue and other related observations, a clinical examination was performed. When indicated, further body parts were examined. In each case, a clinical image was obtained. Haematological and biochemical studies were carried out when necessary.

After informed written consent a 2mm punch biopsy was performed from the lesional skin and the sample was sent in 10% buffered formalin to the department of Pathology at the Government Medical College, Ananthapuramu for histopathological analysis. After tissue

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processing Haematoxylin and eosin (H&E) stained sections were obtained. No Special stains were used. After detailed microscopic examination the corresponding histopathological diagnosis was noted.

CRITERIA FOR INCLUSION:

The study included all of the patients with acquired facial melanosis, who gave their consent.

EXCLUSION CRITERIA:

Patients with pigmentation secondary to systemic diseases and Nevi were not included in the study.

Microsoft Excel 2010 software was used for statistical analysis.

RESULTS:

Table -1: Age Distribution

S.No.	Age in years	Number of cases	Percentage
1.	<20	04	4%
2.	21-30	12	12%
3.	31-40	62	62%
4.	41&above	22	22%
	Total	100	100%

Out of 100 cases, maximum numbers of cases were between the ages of 31 and 40 years seen in 62% of the cases followed by 22% seen in over the age of 41 years.4% were under the age of 20, 12% were between the ages of 21 and 30 years.

Table-2: Sex Distribution

S.No.	Sex	Number of cases	Percentage
1.	Male	36	36%
2.	Female	64	64%
	Total	100	100%

Females outnumbered the males in our study group with 64% and 36% respectively.

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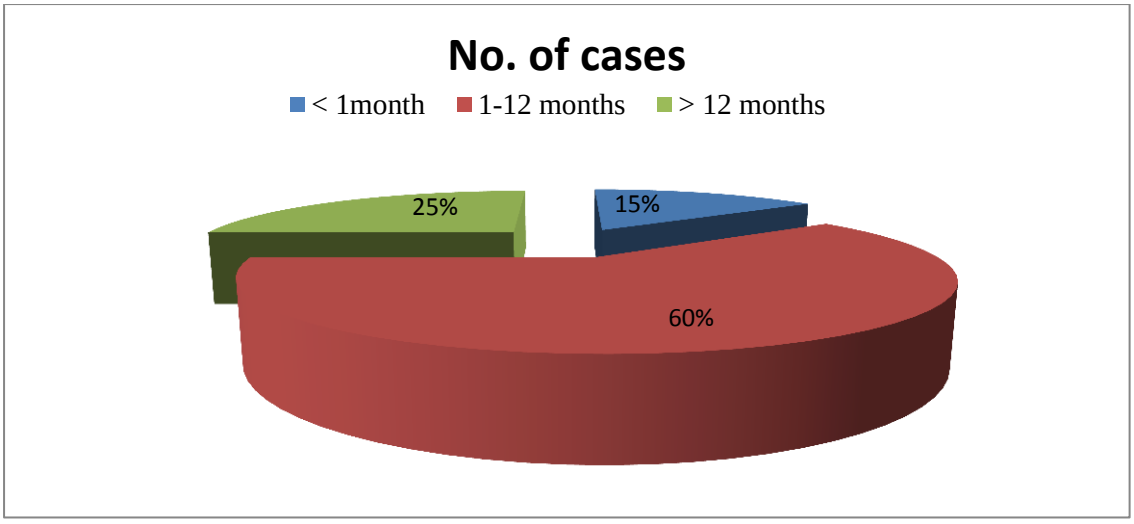

Figure 1 Pie Chart showing duration of symptoms

In most of the cases i.e in upto 60% of cases the duration of the symptoms ranged from 1-12 months.

Table – 3 Site of Involvement

S.No.	Site	Number of cases	Percentage
1.	Cheeks	10	10%
2.	Nose + cheeks	12	12%
3.	Peri oral	3	3%
4.	Peri orbital	3	3%
5.	Ramus of the mandible	4	4%
6.	Forehead	8	8%
7.	Cheeks + fore head	14	14%
8.	Chin	8	8%
9.	All over face	38	38%
	Total	100	100%

38 individuals in our study had complete facial hypermelanosis. Periorbital and perioral sites were less commonly involved seen in 03 cases each.

Table 4 - Type of the disease:

S.No.	Disease	Number of cases	Percentage
1.	Riehl's melanosis	30	30%
2.	Melasma	22	22%

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3.	Seborrheic melanosis	13	13%
4.	Post inflammatory hyper pigmentation	6	6%
5.	Ashy dermatosis	6	6%
6.	Drug induced hyper pigmentation	5	5%
7.	Lichen planus pigmentosus (LPP)	5	5%
8.	Topical steroid damaged face	4	4%
9.	Perioral hyperpigmentation	3	3%
10.	Periorbital hyperpigmentation	3	3%
11.	Freckles	2	2%
12.	Lentigenes	1	1%
	Total	100	100%

In our study out of 100 cases Riehl's melanosis was the most common disease type seen in 30 cases. Melasma was seen in 22 cases.

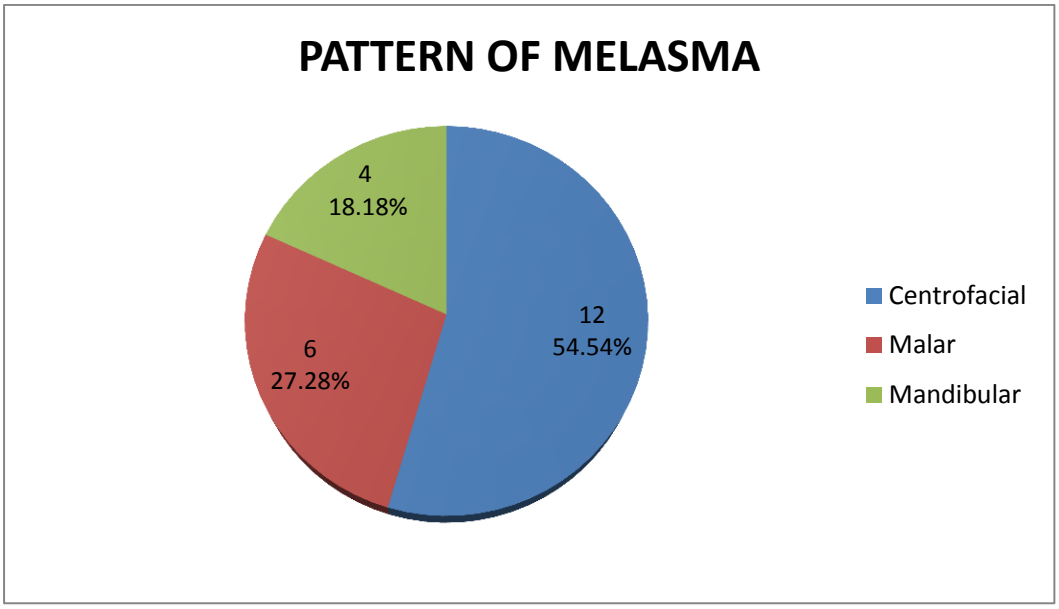

Figure 2 – Pie chart showing pattern of melasma

Among the 22 cases of Melasma observed in the study, centrofacial melasma pattern was the most common pattern seen in 12 instances amounting upto54.54%

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Table 5 – Various Parameters

Parameters	Value
Female to Male	1.78:1
Mean age of patients in years	35.5
Mean duration of hyperpigmentation in months	12 ± 5.3
Confounding factors	
Sun light	100%
Cosmetics	33%
Hair dye	46%
Turmeric application	23%

Table 6 – Histopathological Features

HPE Findings	RM (n=30)	Melasma (n=22)	SM (n=13)	PIH (n=6)	AD (n=6)	LPP (n=5)	Misc (n=18)
Hyperkeratosis	18	2	10	3	0	3	6
Epidermal thinning	0	15	0	1	5	2	3
Hypergranulosis	0	0	5	0	0	1	0
Increased melanin pigment through out the epidermis	26	22	12	2	6	0	10
Increased basal layer melanin	27	20	4	6	6	4	5
Basal layer Vacuolation	23	2	0	2	5	5	0
Melanophages	11	11	11	4	3	4	7
Band like dermal infiltrate	0	0	0	0	0	5	0
Diffuse demal infiltrate	2	19	2	5	4	5	2
Perivascular infiltrate	3	16	4	6	6	5	3

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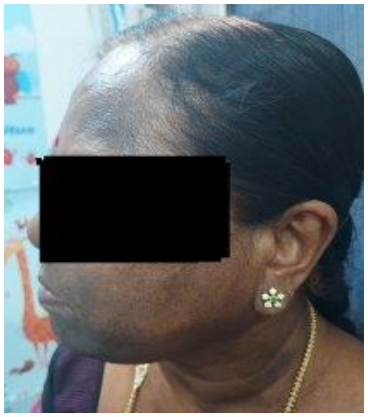
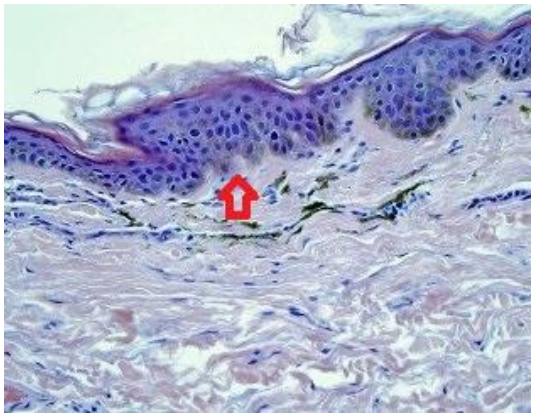
A  B 

Fig 3: A&B: Clinical and histopathology pictures of Riehls melanosis showing Hyperkeratosis, increased melanin throughout epidermis (red arrow, H&E stain 40X)

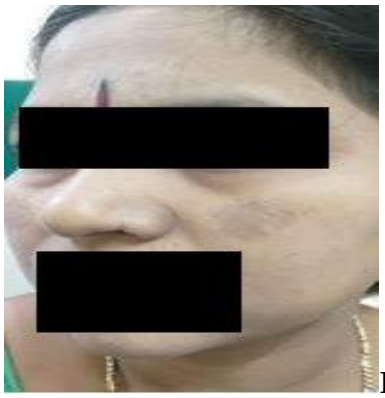
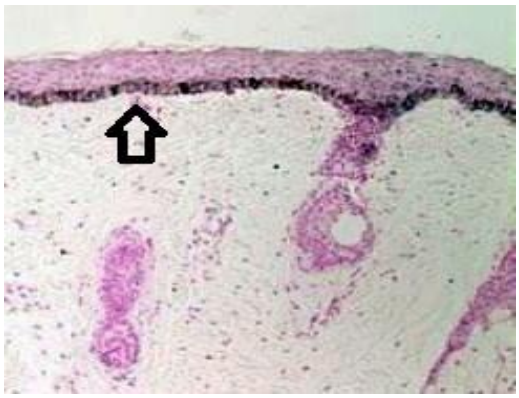
A  B 

Fig 4: A&B: Clinical and histopathological images of melasma. Arrow showing increased melanin in the epidermis (H&E Stain 40X)

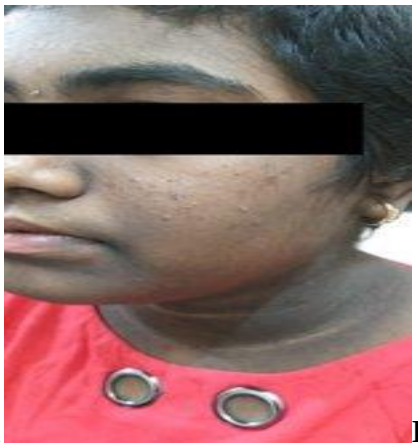
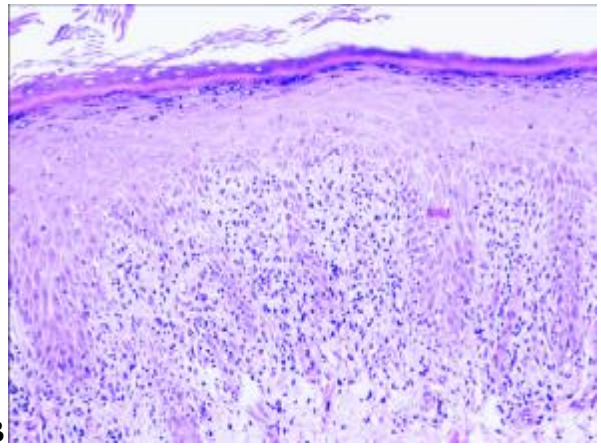
A  B 

Fig 5: A: Clinical image of Female Child developed LPP after applying mustard oil and toothpaste. B: Histopathology image showing band of infiltrate.(H&E stain 10X)

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Fig 6: Seborrheic Melanosis

Fig 7: Riehl's Melanosis

Fig 8: Ashy dermatosis

Table 7- Type of Melasma

S.No.	Melasma	Number of cases	Percentage
1.	Epidermal	5	22.7%
2.	Dermal	3	13.6%
3.	Mixed	11	50%
4.	Indeterminate	3	13.7%
	Total	22	100%

The most prevalent type of melasma in histopathology was mixed type, seen in 11 out of 22 cases.

DISCUSSION:

There is a rising trend in the number of patients visiting dermatology OPDs with complaint of facial hyper melanosis, and there are many contributing factors, including increased awareness, social and marital pressure to look more attractive, use of drugs and cosmetics, increased sun exposure, rising obesity, and other hormonal abnormalities brought on by changing lifestyles [5].

In our study during the period of December 2021 to August 2022, we received 100 cases with facial hyperpigmentation out of 1108 cases who attended the outpatient department of Dermatology, government general hospital, Ananthapuramu, with various clinical presentations, constituting 9% of the total cases.

Out of the 100 patients, the majority (62%) were in the 31–40 age range, similar to the study done by Gupta S et al. [6](46.6%) followed by the 21–30 age range (22%). In the studies done by Hassan et al. [7] Thoyyib M et al. [8] and Shahana et al. [9] also the common age group involved was 21-40years (56.73%), 21-40 years (59.7%) and 21-30 years (49%) respectively. The mean age in our study was 35.5 years which was comparable to the study

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done by Thoyyib M et al. [8] and Kaur et al. [10] and where the mean age was and 35.64 years and 36.18 years respectively.

According to Ana Perez et al. [11], facial hyperpigmentation is common in middle-aged women and is related to both endogenous (hormones) and exogenous (such as cosmetics and perfumes, as well as exposure to sunlight) factors. Furthermore, facial hyperpigmentation causes significant cosmetic disability, which may explain why female patients seek medical advice at a slightly higher rate.

In our study there was female preponderance with female to male ratio 1.78:1 which was similar to the study done by Hassan et al. [7] and Thoyyib M et al. [8] where it was 1.92:1 and 2.04:1 respectively.

In the study done by Shahana et al. [9] and Kaur et al. [10] and the female to male ratio was 4:1 which is slightly more compared to our study. The reason might be because their studies have been conducted in city population where there is increased consciousness of beauty, making female population in the cities come to the hospital at very early stages even with little pigmentation compared to males.

In our study, the duration of the symptoms ranged from 1 to 12 months in up to 60% of cases, and it was >12 months in 25% of cases, which was similar to the studies done by Kaur et al. [10] where the majority of the patients presented with a duration of illness ranging from 3 to 12 months, i.e., 54% and 46% patients had a duration of >12 months.

In this study on facial melanosis, Riehl's melanosis (30%) was the commonest cause observed in contrast to other studies [7-10] where melasma was the most common cause of facial hyperpigmentation. The increased frequency of Riehl's melanosis cases in our study might be attributable to inadvertent use of over the counter creams, home remedies and cosmetics for the disorders of facial pigmentation.

Table 8: Types facial melanosis observed in our study compared with other studies

S.No	Disease	Present study n=100	Thoyyib et al. [8] n= 1024	Shahana et al. [9] n=100	Hassan et al. [7] n=208	Kaur et al. [10] n=100
1.	Riehl's melanosis	30%	0.39%	35%	5%	2%
2.	Melasma	22%	17.2%	55%	46.2%	35%
3.	Seborrheic melanosis	13%	7.5%	-	-	
4.	Post inflammatory hyper pigmentation	6%	35.3%	-	22.15%	7%
5.	Ashy dermatosis	6%	-	-	-	12%

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6.	Drug induced hyper pigmentation	5%	-	-	-	4%
7.	Lichen planus pigmentosus	5%	0.29%	-	5.7%	22%
8.	Topical steroid damaged face	4%	-	-	-	
9.	Perioral hyperpigmentation	3%	6.9%	-	-	
10.	Periorbital hyperpigmentation	3%	15.7%	10%	8.9%	6%
11.	Freckles	2%	0.68%	-	-	
12.	Lentigenes	1%	0.87%	-	-	
	Total	100%				

Centrofacial type (54.54%) was the most prevalent melasma pattern discovered in the current investigation, which is consistent with other Indian studies [12, 13]. However, malar type predominated among the types in other studies [7-9, 14].

The study by Shah et al. [15], which found epidermal thinning, basal layer liquefaction, interface alterations, and dermal melanophages in every instance (100%) was comparable to the histopathological results of the melasma cases in our study. According to Kanwar et al.[16], basal layer vacuolization, hyperkeratosis, epidermal thinning, dermal melanophages, band-like infiltrates, and perivascular infiltrates were all present in 78.5%, 13.8%, 7.2%, 63%, 18.5%, and 81.5% of the cases of LPP, where as in our study it was 100%, 60%, 40%, 80%,100% and 100% respectively. According to Vega et al. [17] 80% of cases had hyperkeratosis, 65% had epidermal thinning, 85% had basal layer vacuolization, 95% had perivascular infiltrates, and 100% had dermal melanophages.

CONCLUSION:

Multiple facial hypermelanosis patterns are regularly seen by dermatologists. Especially women with altered facial pigmentation are particularly susceptible to social and psychological pressures. It is necessary to determine how hormone changes, lifestyle choices, and occupation affect the aforementioned group. Since numerous hyperpigmentary syndromes can mimic one another, a thorough examination employing a variety of modalities is necessary to make a final diagnosis. The gold standard for validating a diagnosis is histopathology. Therefore, clinico-pathological correlation should be performed to assess for better care in individuals with facial hyperpigmentation. Data on the classification of face hyperpigmentation and the connection of various diagnostic instrument findings are in short supply. In this area, more research with larger cohorts is required.

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Limitations of this study were small sample size and inability to perform dermatoscopic examination.

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Financial Resources: No funding sources

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